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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 09/766,035 | 01/19/2001 | Ossi Kalevo | 460-010108-US(PAR) | 7931 |

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| EXAMINER |
|---|
| LE, VU |

| ART UNIT | PAPER NUMBER |
|---|---|
| 2613 | |

DATE MAILED: 06/27/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

| Office Action Summary | Application No. | Applicant(s) | |
|---|---|---|---|
| | 09/766,035 | KALEVO ET AL. | |
| | Examiner | Art Unit | |
| | Vu Le | 2613 | |

*-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --*

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1)☐ Responsive to communication(s) filed on _____ .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4)☒ Claim(s) *1-41* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *37-40* is/are allowed.

6)☒ Claim(s) *1-5,7-9,14,19-23 and 41* is/are rejected.

7)☒ Claim(s) *6,10-13,15-18,24-36* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

**Application Papers**

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

13)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) *3* .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

***Claim Rejections - 35 USC § 102***

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in-

*(1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent; or*

*(2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for the purposes of this subsection of an application filed in the United States only if the internation application designated the United States and was published under Article 21(2) of such treaty in the English.*

2. Claims 1, 19, 41 are rejected under 35 U.S.C. 102(e) as being anticipated by Etoh, RE 37,668.

Re claims 1 and 19, Etoh discloses the same method/apparatus for reducing visual artefacts in a frame of a digital video signal which is coded by blocks and then decoded (figs. 1,4,6; entire col. 20), a block type being defined according to the coding method for a block selected from a predetermined set of coding types (fig. 10; col. 23, lines 5-38), in which filtering is performed to reduce visual artefacts due to a block boundary (fig. 1:2 or fig. 6; col. 21, line 1 to col. 22, line 21. In the cited segment, Etoh correlates visual deterioration i.e. artefacts with the complexity of the contour pixels i.e. boundary pixels), characterized in that the filtering performed on the block boundary depends on block types of the frame in the environment of the block boundary (fig. 6; col. 20, line 45 to col. 21, line 43. In the cited segment, the degree of smoothing i.e. filtering depends on the pixel pattern within a block of a classified region).

Re claim 41, the technical features as claimed are identical to those of claim 1 except for a storage medium for storing a software program to execute the steps as recited in claim 1. However, it is evidenced in Etoh that the encoding/decoding method as disclosed may be implemented by a computer system (col. 1, line 54+), which would have inherently necessitated a recording medium to store a software program as claimed.

***Claim Rejections - 35 USC § 102***

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless --
>
> (a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

4. Claims 1-5, 7-9, 14, 19-23 are rejected under 35 U.S.C. 102(a) as being anticipated by Kim et al., "A Deblocking Filter with Two Separate Modes in Block-Based Video Coding", IEEE Transactions on Circuits and Systems for Video Technology, vol. 9, no. 1, pp. 156-160, February 1999.

Re claims 1 and 19, the method/apparatus for reducing visual artefacts in a frame of a digital video signal which is coded by blocks and then decoded reads on Kim et al (Abstract summarizes a method; section III: Experimental Results reveals an apparatus i.e. MPEG-4);

a block type being defined according to the coding method for a block selected from a predetermined set of coding types reads on Kim et al (section II: Proposed

Deblocking Filter and section II, part B: Mode Decision. Also, the claimed coding types reads on the implied MPEG-4 coding modes e.g., intra, inter and bidirectional coding modes disclosed in section III: Experimental Result. The claimed block type reads on a region type being defined in section II, part B: Mode Decision),

in which filtering is performed to reduce visual artefacts due to a block boundary reads on Kim et al (section II: Proposed Deblocking Filter),

characterized in that the filtering performed on the block boundary depends on block types of the frame in the environment of the block boundary reads on Kim et al (section II: Proposed Deblocking Filter and parts B, C & D).

Claims 2 & 20 recite "...the frame comprises at least one region of blocks, each block within said region having a region type, and that the filtering performed on the block boundary depends on a region type of the blocks in the environment of the block boundary" reads on Kim et al (section II, part B: Mode Decision).

Claims 3 & 21 recite "...the filtering performed on the block boundary depends on a block type of a block on a first side of the block boundary and on a block type of a block on a second side of the block boundary" reads on Kim et al (section II, part D: Filtering in the Default Mode. In this segment, block boundary pixels $v_4$ and $v_5$ represent pixels of blocks on opposite sides of the block boundary. See fig. 1).

Claims 4 & 22 recite "...at least one parameter of the filtering performed to reduce visual, artefacts due to a block boundary on at least one side of the block

boundary is modified according to the block type of at least one block in the environment of the block boundary" reads on Kim et al (section II, parts A-D, figs. 2 & 4. In these segments, the filtering to reduce artefacts due to a block boundary is modified according the block boundaries in the environment of the region type. In other words, the filtering in Kim et al is adaptive).

Claims 5 & 23 recite "...at least one parameter of the filtering performed to reduce visual artefacts due to a block boundary is modified according to the block type of a first block and a second block, the first and second block being located on opposite sides of the block boundary" reads on Kim et al (see rejection arguments in claims 3-4 & 21-22 above).

Claim 7 recites "...in which a number of pixels (n) is selected for examination from at least one side of the block boundary, characterized in that the number of pixels (n) selected for examination depends on the image content of the frame in the environment of the block boundary, and that the number of pixels (n) selected for examination further depends on the block type of a block in the environment of the block boundary" reads on Kim et al (section II, parts B-D).

Claim 8 recites "...the number of pixels (n) selected for examination depends on the difference in pixel value (Δ) between pixels across the block boundary" reads on Kim et al (section II, part B: Mode Decision).

Claim 9 recites "...the number of pixels selected for examination depends on the size of the quantization step (QP) of the coefficients used in the coding of the blocks" reads on Kim et al (fig. 2: "QP" which represents quantization parameter of the macroblock where a boundary pixel belongs).

Claim 14 recites "...pixels to be filtered are selected from the pixels selected for examination" reads on Kim et al (fig. 1. In the figure, $S_0$, $S_1$ & $S_2$ represent groups of pixels for examination, and $v_4$ & $v_5$ for instance are pixels selected from these groups for filtering).

***Claim Rejections - 35 USC § 103***

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

6. Claim 41 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kim et al.

Re claim 41, the technical features as claimed are identical to those of claim 1 except for a storage medium for storing a software program to execute the steps as recited in claim 1. However, it is notoriously well known in the art that MPEG-4 as recited in Kim et al may be implemented by hardware or software or a combination of both. If software implementation is chosen by design, then it is reasonably obvious to

conclude that a storage medium for storing a software program to execute the steps as recited in claim 1 is necessitated.

***Allowable Subject Matter***

7. Claims 25-40 are being treated under 35 U.S.C. § 112, 6th ¶ because of the following 3-prong analysis:

- Phrase "means for" or "step for" are used in the claim;
- "means for" or "step for" is modified by functional language; and
- "means for" or "step for" is not modified by sufficient structure, material or acts for achieving the specified function.

Therefore, the phrases "means for selecting", "means for examining", "means for determining" as recited in claims 25-36, "means for coding", "means for decoding" as recited in claims 37, 39 and 40, and "means for reducing visual artefacts" as recited in claim 38 reads on the respective elements of figures 4-5 of the drawings.

8. Claims 37-40 are allowed.

9. The following is a statement of reasons for the indication of allowable subject matter:

Claims 37-40 are "means plus function" claims which read on figures 4-5 of the drawings. Thus, the technical features as disclosed in figures 4-5 are neither anticipated nor rendered obvious by the prior art of record.

10. Claims 6, 10-13, 15-18, 24-36 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The prior art of record fails to anticipate or render obvious the technical features of:

"...said at least one parameter is selected from a group comprising; a number of pixels to be examined, a number of pixels to be filtered, an activity measure providing an indication of the difference between pixel values on one side of the block boundary, a filtering window" as recited in claim 6;

the specific formula as recited in claim 10;

"...the number of pixels (n) is first defined according to the image content of the frame in the environment of the block boundary, and the number of pixels (n) is further truncated according to the block type of a block in the environment of the block boundary to give a truncated number of pixels ($n_{tr}$) for examination" as recited in claim 11;

the table as recited in claim 12;

"...certain pixels to be filtered are selected, and a new value is determined for each pixel to be filtered on the basis of pixels that appear in a filtering window set around the pixel" as recited in claim 13.

Claims 25-36 are "means plus function" claims which read on figures 4-5 of the drawings. Thus, the technical features as disclosed in figures 4-5 are neither anticipated nor rendered obvious by the prior art of record.

**Contacts**

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Examiner Vu Le whose telephone number is (703) 308-

6613. The examiner can normally be reached on Monday to Friday from 8:30 AM to 5:00 PM.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (703) 305-4700 or Customer Service whose number is (703) 308-6789.

**Very Important!**

The fax number for submitting all Official communications is (703) 872-9314.

The fax number for submitting informal communications such as drafts, proposed amendments, etc., may be faxed directly to the Examiner at (703) 746-6867.

***Vu Le***

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| INFORMATION DISCLOSURE CITATION FORM FOR PATENT APPLICATION (FORM PTO-1449) (Substitute) | Docket No.: 460-010108-US(PAR) | Serial No.: 09/766,035 |
|---|---|---|
| | Applicant(s): AKSU et al | |
| | Filing Date: 1/19/01 | Group: |



**U.S. PATENTS**

| Initials | Patent Number | Issue Date | Name | Class | Sub-class | Filing date |
|---|---|---|---|---|---|---|
| | | | | | | |

**FOREIGN PATENT DOCUMENTS**

| Initials | Document Number | Date | Country | Name | Translation? Yes/No/n/a |
|---|---|---|---|---|---|
| VL | WO 00/49809 | 8/24/00 | PCT | Koninklijke Philips Electronics N.V. | n/a |
| ) | WO 98/41025 | 9/17/98 | PCT | Nokia Oy | n/a |
| | EP 0884911 A1 | 12/16/98 | Europe | Nokia Mobile Phones Ltd. | n/a |
| VL | EP 0859518 A1 | 8/19/98 | Europe | Sony Corporation | n/a |

**OTHER DOCUMENTS (Title, Author, Date, Pages, Etc., if known)**

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VU LE
PRIMARY EXAMINER

Examiner's Signature: Date Considered: 6/24/03

Initial if reference was considered, whether or not citation is in conformance with MPEP. Mark through citation if not considered. Include a copy of this citation form with your next correspondence to the Applicant(s).

Customer No.: 2512

VL
6/24/03

(1) Express Mail No.: EL627424835US
Mailing Date: 1/19/2001
Title: A METHOD FOR FILTERING DIGITAL IMAGES, AND A FILTERING DEVICE
Assignee: Nokia Mobile Phones Ltd.
Attorney Docket No.: 460-010107-US(PAR)

VL
6/24/03

(2) Express Mail No.: EL627424883US
Mailing Date: 1/19/2001
Title: A METHOD FOR ENCODING IMAGES, AND AN IMAGE CODER
Assignee: Nokia Mobile Phones Ltd.
Attorney Docket No.: 460-010109-US(PAR)

Respectfully submitted,

19 Jan 01

Clarence A. Green Reg. No.: 24,622 Date

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